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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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06/23/2006

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EXAMINER

NGUYEN, STEVE N

ART UNIT

PAPER NUMBER

2138

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/691,644	KIM ET AL.	
	Examiner	Art Unit	
	Steve Nguyen	2138	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1/30/04; 2/19/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-21 have been examined.

Drawings

2. Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 1, 5, and 11 objected to because of the following informalities: the preamble should conclude with the word "comprising".

In the first limitation: "a physical layer for receiving the traffic data and the control message from the data control channel and the date channel separately and decoding the received traffic data and control data", it should be made clear that the control

message is received from the data control channel, and that the traffic data is received from the data channel.

In the above limitation, "date channel" should be "data channel".

Claim 5 recites the limitation, "wherein the HARQ state machine is dualized".

The term "dualized" is only mentioned, but not defined, in the specification. Therefore the term will be given its broadest reasonable interpretation according to the general meaning of "dual".

Claim 11 recites, "An Apparatus of claim 1". This should be rewritten, "An apparatus" or "The apparatus".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 2-4, 6-8, and 21 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites, "An apparatus for controlling the operation of the data channel in a mobile communication system that simultaneously a control message". A verb is missing following the word "simultaneously".

Claim 1 recites, "a physical layer for receiving the traffic data". There is insufficient antecedent basis for "the traffic data". Applicant may have intended the preamble to read, "and the traffic data over the data channel".

Claims 2, 3, 4 recite, "the packet data channel". There is insufficient antecedent basis for "the packet data channel".

Claim 6 recites, "wherein if a response delay time comprises 2 slots, each of the dualized HARQ state machines alternately controls the state transition for 2 slots for the data received over the packet data channel". It is unclear what "each of the dualized HARQ state machines" is referring to because there is only a single state machine recited in the base claims. It is also unclear what "a response delay time" refers to; whether the response is referring to the response of the receiver receiving a packet, or whether it refers to the response of outputting the stored data to the HARQ controller.

Claim 7 recites, "the HARQ state machine controls transition to a waiting state until an operation of the decoder is ended". It is unclear which of the dualized HARQ state machines in claim 6 "the HARQ state machine" refers to.

Claim 8 recites, "wherein the state function section comprises: first state processors for performing control operations of the associated dualized HARQ state machines in the initial state". It is unclear what "the associated dualized HARQ state machines" refers to because in claim 5, there is only a single HARQ state machine. However, in claim 6, there are a plurality of HARQ state machines. Furthermore, the state function section recited in the preamble of claim 8 is supposed to control the "transition of the HARQ state machine depending on a processing result of the physical

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layer" according to base claim 2, and not "control operations of the associated dualized HARQ state machines" as contradictorily stated in claim 8.

Claim 21 recites, "all of which are related to transition decision". The term "related" is indefinite because it is a relative term. Furthermore, there is insufficient antecedent basis for "transition decision".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 1-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Seidel et al (US Pat. 6,658,005; hereinafter referred to as Seidel) in view of Decker (US Pat. 5,946,320).

As per claim 1:

Seidel teaches an apparatus for controlling the operation of the data channel in a mobile communication system that simultaneously a control message over the data control channel and the data over the data channel and supports hybrid automatic repeat request (HARQ) (abstract), the apparatus:

- a physical layer (col. 7, lines 62-65) for receiving the traffic data and the control message from the data control channel and the date channel separately and decoding the received traffic data and control data (col. 2, lines 26-28);

Not explicitly disclosed by Seidel is a physical layer's HARQ controller for calculating the decoded results received from the physical layer and controlling the physical layer according to the calculating result. However, Decker in an analogous art teaches a Hybrid ARQ system comprising a receiver that calculates the decoded data received from the physical layer (Fig. 4 and col. 4, lines 15-27; Decker illustrates a state diagram of the receiver in which repuncturing and convolutional decoding is performed).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the HARQ controller of Decker for decoding data in the system of Seidel. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that the data units of Seidel must be decoded (col. 2, lines 28-32).

As per claim 2:

Seigel further teaches the apparatus of claim 1, wherein the physical layer's HARQ controller comprises:

- an HARQ state machine for controlling state transition of an initial state for initializing parameters while waiting for a control message to be received over the packet data control channel received from the physical layer (Seigel sends and receives the control message as shown in Fig. 5, so it would have been obvious to initialize parameters before receiving), a decoding state for decoding the control message, a control state for calculating the decoding result (Fig. 5, element 260), a demodulation state for demodulating packet data on the packet data channel (Fig. 5, element 270), a decoding state for turbo decoding the demodulated packet data (Seigel teaches that Turbo encoding can be used in col. 5, lines 24-29; therefore the packet must be decoded), and a response state for transmitting the turbo-decoding result (col. 7, lines 32-34); and
- a state function section for controlling state transition of the HARQ state machine depending on a processing result of the physical layer (col. 7, lines 38-40; the state machine transitions to state 220 as long as the session is ongoing, else it transitions to the END state).

As per claim 3:

Seigel further teaches the apparatus of claim 1, further comprising a data path processor for controlling a processing path of data received over the packet data channel (processing is done by a processor in col. 5, lines 37-40).

As per claim 4:

Seigel further teaches the apparatus of claim 1, further comprising an output buffer controller for storing data obtained by demodulating and decoding data received

over the packet data channel and outputting the stored data to the HARQ controller (a buffer controller must be present for the combining to take place as described in col. 7, lines 29-32).

As per claim 5:

Seigel further teaches the apparatus of claim 2, wherein the HARQ state machine is dualized (Fig. 5; the state machine is dualized because it receives data on dual channels: the data channel and the control channel).

As per claim 6:

Seigel further teaches the apparatus of claim 5, wherein if a response delay time comprises 2 slots, each of the dualized HARQ state machines alternately controls the state transition for 2 slots for the data received over the packet data channel (Fig. 5; the state machine controls the state transition for steps 260 and 270 which are two slots of data).

As per claim 7:

Seigel and Decker teach the apparatus of claim 6 above. Not explicitly disclosed is wherein when transmitting a signal for decoding of the packet data to the physical layer, the HARQ state machine controls transition to a waiting state until an operation of the decoder is ended.

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to transition to a waiting state on a state machine. This modification would have been obvious to one of ordinary skill in the art, at the time the

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invention was made, because one of ordinary skill in the art would have recognized that the packet must first be decoded before further action can be taken.

As per claim 8:

Decker further teaches state processors for performing control operations of the HARQ state machine (col. 5, lines 5-8).

As per claim 9:

Seigel further teaches the apparatus of claim 1, wherein the physical layer comprises one data channel turbo decoder (Seigel teaches that Turbo encoding can be used in col. 5, lines 24-29).

As per claim 10:

Seigel further teaches the apparatus of claim 1, wherein the decoder is a turbo decoder (Seigel teaches that Turbo encoding can be used in col. 5, lines 24-29; therefore the packet must be decoded with a decoder).

As per claim 11:

Seigel further teaches the apparatus of claim 1, wherein the physical layer's HARQ controller requests a retransmission of the traffic data to the physical layer of the mobile communication system when the result of the decoded data is bad (col. 7, lines 33-34).

As per claim 12:

Seigel further teaches the apparatus of claim 1, wherein the physical layer's HARQ controller transmits the decoded data to an upper layer when the result of the decoded data is good (col. 7, lines 32-33).

As per claim 13:

Seigel further teaches the apparatus of claim 1, wherein the physical layer comprises a decoder for decoding received control data (Fig. 5, element 260), a demodulator for demodulating the data, and a decoder for decoding the demodulated data (Fig. 5, element 270).

As per claim 14:

Seigel further teaches the apparatus of claim 13, wherein the physical layer's HARQ controller determines whether to demodulate the data depending on the decoded control data and outputs the decoded control data to the demodulator and the decoder when the HARQ controller determines to demodulate the data (col. 7, lines 23-28; the data is demodulated and decoded depending on the sequence numbers received on the control channel).

As per claim 15:

Seigel further teaches the apparatus of claim 1, wherein the physical layer's HARQ controller determines whether to demodulate the data depending on the calculated result and outputs the result of the decoded control data to the physical layer when the HARQ controller determines to demodulate the data (col. 7, lines 23-28; the data is demodulated and decoded depending on the calculation of the beginning of the frame which is determined by the sequence numbers received on the control channel).

As per claim 16:

Seigel further teaches the apparatus of claim 1, wherein the physical layer's HARQ controller determine whether to demodulate and decode the received data

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depending on a decoding result of the control message, outputs the decoded control message to the demodulator and the decoder during demodulation and decoding of the received data (col. 7, lines 23-28; the data is demodulated and decoded depending on the sequence numbers received on the control channel), controls output of a response signal according to a decoding result of the data (col. 7, lines 35-37).

As per claim 17:

Seigel further teaches apparatus of claim 1, wherein the physical layer's HARQ controller delivers the decoded data to the upper layer (col. 7, lines 32-33).

As per claim 18:

Seigel teaches an apparatus of HARQ (Hybrid Automatic Repeat Request) controller for retransmitting data in a mobile station of a mobile communication system (abstract), the HARQ controller comprising:

- a state function section for indicating an operation of the physical layer according to the determined result from the HARQ state machine (Fig. 5; col. 7, lines 38-40; a transition to state 220 is made as long as the session is ongoing, else a transition to the END state is made).

Not explicitly disclosed by Seigel is a HARQ controller or an HARQ state machine for receiving state information from a physical layer and determining a transition result of a next state to a state function section. Decker in an analogous art teaches a Hybrid ARQ system comprising a receiver that calculates the decoded data received from the physical layer based on a state machine (Fig. 4 and col. 4, lines 15-27; Decker

illustrates a state diagram of the receiver in which repuncturing and convolutional decoding is performed).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the HARQ controller and state machine of Decker for decoding data in the system of Seidel. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that the data units of Seidel must be decoded (col. 2, lines 28-32).

As per claim 19:

Seidel further teaches the apparatus of claim 18, wherein the mobile station receives a data channel and a control channel for transmitting control information for decoding the data channel (abstract).

As per claim 20:

Seidel further teaches the apparatus of claim 19, wherein the mobile station includes a control channel decoder for decoding the data channel (Fig. 5, element 260), a data channel demodulator for demodulation the data, and a data channel decoder for decoding the demodulated data (Fig. 5, element 270).

As per claim 21:

Seidel further teaches the apparatus of claim 19, wherein the state function section commands an operation of any one of the control channel decoder, the data channel demodulator and the data channel decoder, all of which are related to transition decision (Fig. 5, element 260 is controlled by a state function)

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steve Nguyen whose telephone number is (571) 272-7214. The examiner can normally be reached on M-F, 9am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steve Nguyen
Examiner
Art Unit 2138



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